Loop-iNET Intelligent Network Management System

Features

- Web based application following design of thin client computing
- Windows style user desktop environment
- Supported browsers: Firefox; Internet Explorer (IE)
- Supported server platform: MS Windows, Linux (CentOS)
- Database server: MySQL RDBMS
- Multi-language support (upon request)
- Automatic load balancing for the major components to increase performance of iNET server
- Hot standby server redundancy with automatic failover to provide high availability(HA) for the major system components*
- System access security with role-based user access control. The access privilege can be customized through any combination of operation functions and managed NEs. User inherits privileges automatically from group privilege
- System operation and user access log
- Multi-hierarchical subnet structure allows user to provide multi-level network topology display
- SNMP based management system that supports SNMP functions including commands, alarms, and statistics gathering. Other protocol support includes Network Time Protocol (NTP).
- Up to 100,000 Network Elements(NEs) and unlimited concurrent user connection logged into the iNET server
- Network elements of same model with different versions managed by iNET simultaneously
- Node statistics data and alarm reports can be displayed and saved in MS Excel format.
- Enriched topology management provides zoom-in/zoom-out and drag-and-drop functionalities in view, subnet view, link and NE panel status
- Alarm management that provides automatic suppressing and notification via Email with advanced filtering system
- Build-in system monitoring and NE connectivity tool with NE connectivity status for system administration purpose
- Robust and reliable design based on distributed system architecture which provides flexible and scalable solution for network expansions.
- Performance management shows current statistics for the NEs and system
- Advanced optional functions:
  - Currently Active Alarm Summary (CAAS)
  - Graphical Cross-connection Tool (GXC)
  - North Bound Interface: v1/v2C/v3* (NBI)
  - Disaster Recovery (DR) *

* Future option

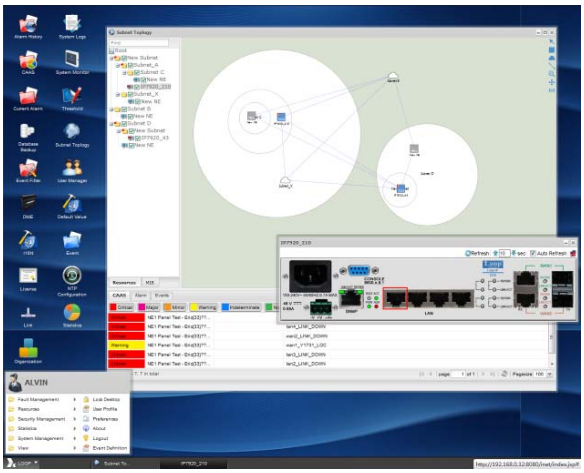
Description

Loop-iNET, based on the scalable and modularized architecture, is a set of intelligent network management software programs which can be taken as both Element Management Layer (EML) and Network Management Layer (NML) based the Telecommunications Management Network (TMN) model. This program is flexibly designed to manage your network regardless of size or complexity. You can add or remove any component as you want without affecting operations of the system. It provides a GUI (graphical user interface) for the management of a communications network containing Loop Telecom products.

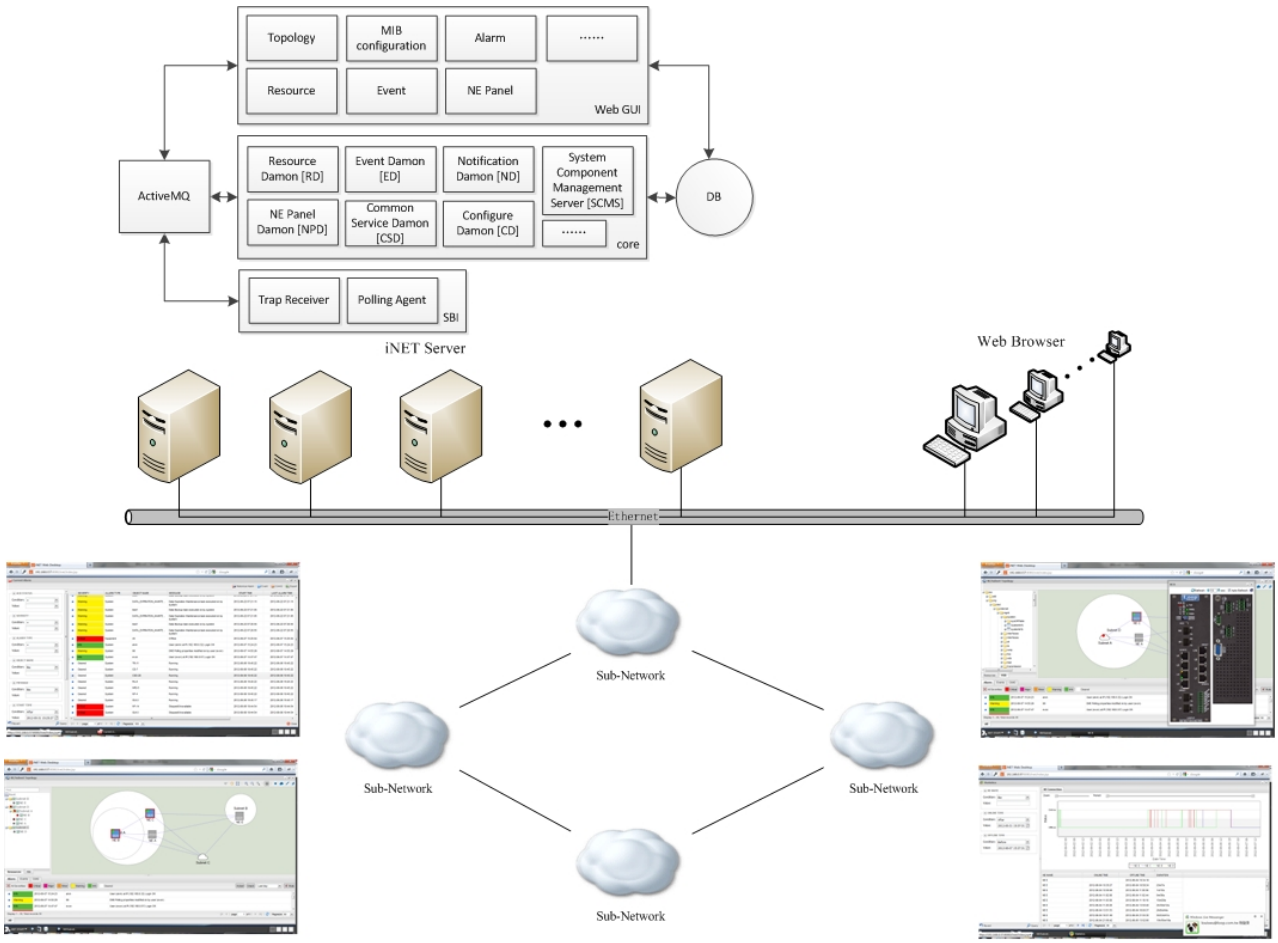
The workforce management is facilitated by the multiple levels of login security, which provides the network manager great flexibility of work assignment. The hierarchical grouping feature, cities, buildings, and rooms, allow rapid access to the desired network element.

All SNMP provided functions are available in Loop-iNET. This includes the execution of all commands, the gathering of all statistics, and the display of all alarm conditions in real time. The map and the reports can be printed as well as viewed directly from the iNET.

By offering feature-rich functionalities, Loop-iNET maximizes the network efficiency, minimizes the operating costs and reduces the potential risks. Moreover, it supports the protocols of SNMP, NTP, and more (upon request). Customization adaptation into different protocols is allowed and upon request.



Loop-iNET Architecture



Loop-iNET Main Functions

- **Topology Management**
  - Offers topology view for:
    - NE/Subnet topology
    - Panel view of equipment (NE)
    - Resource tree
    - MIB tree
  - Supports zooming in and zooming out of topology views
  - Allows users to create a desired layout to reflect the actual network
  - Offers drag-and-drop approach for a user to create an NE icon
  - Port-level topology link

- **Configuration Management**
  - Provides remote control on NE's configuration
  - General parameters setting
  - Provides MIB based monitoring and setting on NE, including diagnosis and performance.

- **Alarm Management**
  - NE alarm/event collection
  - Alarm filtering
  - Alarm display
  - Alarm history
  - Alarm notification

- Configurable alarm audio

- **User & Security Management**
  - Supports adding, deleting, and modifying operations on user account and a group of users
  - Provides operation privileges and scope assignments
  - Provides user operation log
  - Supports multi-condition queries on user operation log
  - Provides user access log
  - Supports multi-condition queries on user access log

- **Diagnosis Management**(Future Option)
  - Graphical Loopback/BERT test tool
  - Port level diagnosis
  - Point-to-Point diagnosis for supported IP based devices

- **iNET Self-Management**
  - Supports real-time monitoring on iNET software processes
  - Supports real-time monitoring on NE connectivity
  - Supports database backup and recovery
  - Provides date and time synchronization between iNET and NE

Loop-iNET Advanced Optional Components

- **System Redundancy and Protection** (Future Option)
  - Disaster Recovery (DR) Solution
    - Provides geographical system redundancy and an independent system on each site
    - DR status monitoring
    - Automatic data replication between redundant sites
    - System failover and recovery using hot-standby/warm-standby mechanism

- **Graphical Cross-connection Tool**
  - NE-Level Cross Connection Configuration
  - Provides equipment cross-connection creation/deletion/display views.
  - Supports Normal/SNCP/ULSR cross-connection types

- **File Transfer**
  - Configuration upload
  - Configuration/Firmware download

- **Currently Active Alarm Summary(CAAS)**
  - Display Equipment CAAS by different severities
  - Query CAAS information based on query conditions

  Note: This function will be available on some selected Loop products supporting CAAS function.

- **North Bound Interface(NBI)**
  - Supports SNMP v1/v2C NBI for Alarms
  - Supports SNMP v3* NBI (* Future Option)
  - Other NBI components are available upon request and additional NRE costs are per-project based. Please contact Loop sales representatives for details.

Third-party System Hardware

Note 1: Hardware system shall be provided by local SI or end-customer.
Note 2: This recommendation list below is the minimum system hardware requirement and it is for reference only. Please consult with a Loop representative for precise hardware spec and quantities.

■ Hardware Specifications for iNET Server

Item	Descriptions
Typical Application	For all numbers of NEs
Processor	Intel Xeon® 4 Core (2.4 GHz or above)
Memory	4GB or above
Hard disk	160GB/7200rpm or above
DVD R/W	DVD ROM
NIC	10/100/1000M
Graphics	ATI Radeon Xpress 200 graphics or equivalent
Mouse	USB Wheel or Optical Mouse
Operating System	Windows Platform: Windows XP Professional/Windows 2008 R2 Server Enterprise/ Windows 7 Professional, Enterprise, Ultimate (32 or 64 bit) Linux Platform: CentOS-6

■ Hardware Specifications for iNET Client PC

Item	Descriptions
Typical Application	For all numbers of NEs
Processor	Intel Core 2 Due (2.4 GHz or above)
Memory	2GB or above
Hard disk	160GB/7200rpm or above
DVD R/W	DVD ROM
Sound card & Speaker	Sound Interface and Speakers
NIC	10/100/1000M
Graphics	ATI Radeon Xpress 200 graphics or equivalent
Mouse	USB Wheel or Optical Mouse
Monitor	21” LCD (1024*768) or above
Operating System	Windows XP Professional/Windows 2008 R2 Server Enterprise/ Windows 7 Professional, Enterprise, Ultimate (32 or 64 bit)/CentOS-5
Web Browser	Firefox/Internet Explorer (IE)

Third-party System Software

Third-Party Software / Open Source Software

Item	Type	Mandatory/ Optional	Description	Name	Remarks
1	Java Runtime Environment	M	One for each iNET server	JDK	Version 6 or above.
2	Web Server / Application Server	M	iNET can run on Apache Tomcat or Jboss AS	Tomcat Jboss	Version 6 Version 4
3	Database	M	Relational database management system	MySQL	MySQL Community Server version 5.5 or above
4	Java Messaging	M	JMS (Java Message Service) message broker	ActiveMQ	Version 5.4 or above
5	Web Browser	M	One browser for each iNET thin client	Firefox IE	Version 18~22 Version 7~9
6	Microsoft Excel	O	iNET report is in character-delimited format. One Microsoft Excel for each user client machine is required	Microsoft Excel	Excel 2007 or later

Associated Management System Standards

Standards

ITU-T M.3100—Generic Network Information Model.
ITU-T M.3200—TMN Management Service: Overview.
ITU-T M.3400—Management Functions

Loop-iNET Ordering Information

To order the Loop-iNET products, you must select maximum one iNET Server, the number of iNET Concurrent User License (s), and other option (such as NE management license) you would like to purchase. If you already have an iNET Server Software and need an upgrade on it, leave the Server Software off of your order form and simply list the option(s) you require and provide Loop with the serial number of the iNET product you have already purchased.

iNET Server Software

Please select the iNET Server Software if desired. If you're purchasing additional options, such as NE license, for an existing network, leave this off of the order form.

iNET Server	Description	Notes
Loop-iNET-Server-**os-lang**	Loop-iNET Server Software (not including hardware, database software and installation). The server software includes basic functions: alarm monitoring, SNMP based configuration including diagnosis, performance, reports with standard character delimited formats. Full version of User's Manual CD (soft copy) included.	▪ Where "**os**" are defined in tables below.

Where **os** is the Operating System selection (Choose the same Operating System for all **os**)

os =	Description	Notes
Windows	Microsoft Windows server platform	For Windows server
Linux	Linux on Intel x86 platform	For Linux server

Where **lang** is the language selection.

lang =	Description	Notes
EN	English	EN is the Default Language supporting all Loop products
CS	Simplified Chinese	Simplified Chinese or Traditional Chinese version only supports selected products, please contact your nearest Loop sales representative
CT	Traditional Chinese	

iNET Concurrent User License

Please specify the number of concurrent user licenses you will be serving.

GUI Clients	Description	Notes
Loop-iNET-User	Each Loop-iNET concurrent user license, not including Windows OS, MS Excel, and H/W	Please order number of iNET concurrent user license(s) required.

iNET DR Software

Please Select the Disaster Recovery (Redundancy) Control Software if desired. If DR is not desired, leave it off of the order form.

iNET DR Software	Description	Notes
Loop-iNET-DR-**os**	Loop-iNET DR (Disaster Recovery) Software license for each physical server. This DR software is in charge of redundancy status monitoring, database replication, and load balancing, system failover and recovery. Future Option	• To order this item, user needs to purchase one additional copy of iNET Server Software. • Each physical server requires a license. • Where os is defined in tables below.

NE Configuration Tool Options

Graphical Cross-connection Tool Software

iNET GXC Tool	Description	Notes
Loop-iNET-GXC-AM3440-**os**	Graphical Cross connection tool for AM3440	AM3440-A/C supported
Loop-iNET-GXC-O9400R-**os**	Graphical Cross connection tool for O9400R	
Loop-iNET-GXC-O9500R-**os**	Graphical Cross connection tool for O9500R	Future Option

iNET Feature Options

Please specify which iNET types you need. You may choose any or all of the available features.

iNET Features	Description	Notes
Loop-iNET-FT-**os**	Upload configuration Download configuration/firmware	File transfer function only supports selected products, please contact your nearest Loop sales representative
Loop-iNET-CAAS-**os**	Currently Active Alarm Summary	CAAS function only supports selected products, please contact your nearest Loop sales representative
Loop-iNET-NBI-ALARM-**os**	Northbound Interface compliant with SNMP v1/v2C including pre-defined SNMP/MIB Alarm support for: 1) alarm traps 2) current alarm table(s) 3) history alarms table(s)	All Alarm objects are coming with pre-defined properties and format. Any change or modification request on this is subject to additional NRE charge.
Loop-iNET-NBI-INVENTORY- **os**	Northbound Interface compliant with SNMP v1/v2C including pre-defined SNMP/MIB Inventory/Resource support for: 1) NE table(s) 2) Plug-in card table(s) 3) Port table(s)	All Inventory objects are coming with pre-defined properties and format. Any change or modification request on this is subject to additional NRE charge. (Future Option).
Loop-iNET-NRE-**os**	NRE charges for special customization per project basis - Special Feature Development - 3rd-party Equipment Management Integration into iNET - Other North Bound Interface (NBI) components - Language Support - Customized report - Customized GUI	Where "**os**" are defined in tables below.

Where **os** is the Operating System selection (Choose the same Operating System for all **os**)

os =	Description	Notes
Windows	Microsoft Windows server platform	For Windows server
Linux	Linux on Intel x86 platform	For Linux server

iNET NE Management Licenses

The total number of network element (NE) licenses you need is the sum of numbers of NE for each NE type.
Language Support: EN (English), SC (Simplified Chinese) or TC (Traditional Chinese)

iNET NE License (Devices List)	Description
Loop-iNET-AM3440-CHA	Each AM3440-CHA Major NE management license (EN)
Loop-iNET-AM3440-CHC	Each AM3440-CHC Major NE management license (EN)
Loop-iNET-AM3440-CHD	Each AM3440-CHD Major NE management license (EN)
Loop-iNET-IP6510-LN	Each IP6510-LN Major NE management license (EN, TC) Future Option
Loop-iNET-IP6700	Each IP6700 Major NE management license (EN, TC) Future Option
Loop-iNET-IP6702	Each IP6702 Major NE management license (EN) Future Option
Loop-iNET-IP6716	Each IP6716 Major NE management license (EN, TC) Future Option
Loop-iNET-IP6763	Each IP6763 Major NE management license (EN) Future Option
Loop-iNET-IP6810	Each IP6810 Major NE management license (EN) Future Option

Loop-iNET-IP6820	Each IP6820 Major NE management license(EN)
Loop-iNET-IP7925	Each IP7925 Major NE management license (EN) Future Option
Loop-iNET-O9100S-3U	Each O9100S-3U Major NE management license (EN) Future Option
Loop-iNET-O9330	Each O9330 Major NE management license (EN) Future Option
Loop-iNET-O9400S	Each O9400S Major NE management license (EN) Future Option
Loop-iNET-O9400R	Each O9400R Major NE management license (EN)
Loop-iNET-O9500	Each O9500 Major NE management license (EN)
Loop-iNET-O9550-CGA	Each O9550-CGA Major NE management license (EN) Future Option
Loop-iNET-O9550-CGC	Each O9550-CGC Major NE management license (EN) Future Option
Loop-iNET-V4150	Each V4150 Major NE management license (EN, TC)
Loop-iNET-V4200-9	Each V4200-9 Major NE management license (EN) Future Option
Loop-iNET-W8140	Each W8140 Major NE management license (EN, SC)
Loop-iNET-W8171	Each W8171 Major NE management license (SC)
Loop-iNET-GenericNE	Each Generic NE management license

Note: Please specify, for each NE type, the actual number (n) of NEs

iNET Software Maintenance Agreement (SMA)

Purchase of the 1st year SMA is mandatory. Please specify how many years of iNET SMA you desire to purchase. The iNET software upgrade/patches on existing functionality are only available within the maintenance period purchased.

Note: Software maintenance packages are available only in yearly basis starting from date of purchase of iNET. The price quoted for the new SMA applies only before the expiration of the current SMA.

iNET Type	Description	Notes
Loop-iNET-SMA	Loop-iNET Annual Software Maintenance - Access to software patches/upgrade, including feature enhancements and major new versions. - 5x8 (GMT+8) field problem remote diagnosis. - 5x8 (GMT+8) consulting via e-mail, phone call and IMs (Skype, MSN, …) - Remote commencement of software patching	▪ Purchase of the 1st year SMA is mandatory. ▪ Please order the number of years of SMA coverage you want to purchase. ▪ All remote support activities, if purchased, are made possible through remote supporting tools, such as VPN or remote desktop. It's the end customer's responsibility to provide all necessary remote access connections and tools at the customer side. ▪ New purchase of iNET components and services will NOT reinstate the expired SMA automatically. ▪ 5x8 denotes Monday through Friday from 9:00am to 5:00pm (GMT+8) ▪ SMA will cover Loop-iNET Software only, and will not cover problems in system hardware, operating system platform, network condition, and viruses.
Loop-iNET-RSMA	Loop-iNET annual reinstatement of SMA (software maintenance agreement). Since Loop-iNET software will keep evolving to support new plug-in cards and new features, it is very important to maintain your maintenance service and reserve your access in software upgrade package. If the purchased SMA has expired, you need to extend the maintenance service by reinstating your SMA and purchasing RSMA for all prior unpaid year(s). Customer with existing iNET running shall reinstate any expired SMA before making any new order of iNET software components and services. It is mandatory to maintain valid SMA when any customized functions are needed in the later phases, a NRE charge might be required.	

Accessories

User's Manual	
Loop-iNET-UM	User's Manual (paper copy). **Note:** A CD version of the manual is already included as standard package.

Ordering Example

Ordered Item	Quantity	Notes
Loop-iNET-Server-Windows-EN	1	English Version; Maximum is 1
Loop-iNET-User	2	Fill in the number of concurrent user licenses required (2 concurrent user licenses in the case for example)
Loop-iNET-NBI-ALARM-Windows	1	Northbound Interface support SNMP v1/v2C/v3*; Maximum is 1
Loop-iNET-IP6820	50	NE Management License of 50 IP6820s
Loop-iNET-SMA	1	1 year of annual software maintenance agreement service provided by Loop

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